



SEQUENCE LISTING

<110> CHITTO S.p.A.
PIZZA, Mariagrazia
SERRUTO, Davide
RAPPOULI, Rino

<120> Improved Bacterial Outer Membrane
Vesicles

<130> 223002100800

<140> US 10/526,113

<141> 2003-09-01

<150> WO PCT/IB2003/004293

<151> 2003-09-01

<150> GB 0220194.5

<151> 2002-08-30

<160> 3

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 320

<212> PRT

<213> Neisseria meningitidis

<400> 1

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Thr	Cys	Leu	Ile	Asp	Ala	Val	Cys	Lys	Lys	Arg	Tyr	His	Asn	Gln	Asn
			20					25					30		
Val	Tyr	Ile	Leu	Ser	Ile	Leu	Arg	Met	Thr	Arg	Ser	Lys	Pro	Val	Asn
			35				40					45			
Arg	Thr	Ala	Phe	Cys	Cys	Leu	Ser	Leu	Thr	Thr	Ala	Leu	Ile	Leu	Thr
			50			55					60				
Ala	Cys	Ser	Ser	Gly	Gly	Gly	Gly	Val	Ala	Ala	Asp	Ile	Gly	Ala	Gly
65				70					75					80	
Leu	Ala	Asp	Ala	Leu	Thr	Ala	Pro	Leu	Asp	His	Lys	Asp	Lys	Gly	Leu
			85					90					95		
Gln	Ser	Leu	Thr	Leu	Asp	Gln	Ser	Val	Arg	Lys	Asn	Glu	Lys	Leu	Lys
			100					105					110		
Leu	Ala	Ala	Gln	Gly	Ala	Glu	Lys	Thr	Tyr	Gly	Asn	Gly	Asp	Ser	Leu
			115				120					125			
Asn	Thr	Gly	Lys	Leu	Lys	Asn	Asp	Lys	Val	Ser	Arg	Phe	Asp	Phe	Ile
			130			135					140				
Arg	Gln	Ile	Glu	Val	Asp	Gly	Gln	Leu	Ile	Thr	Leu	Glu	Ser	Gly	Glu
145				150					155					160	
Phe	Gln	Val	Tyr	Lys	Gln	Ser	His	Ser	Ala	Leu	Thr	Ala	Phe	Gln	Thr
				165					170					175	
Glu	Gln	Ile	Gln	Asp	Ser	Glu	His	Ser	Gly	Lys	Met	Val	Ala	Lys	Arg
			180					185					190		
Gln	Phe	Arg	Ile	Gly	Asp	Ile	Ala	Gly	Glu	His	Thr	Ser	Phe	Asp	Lys
			195				200						205		

Lèu	Pro	Glu	Gly	Gly	Arg	Ala	Thr	Tyr	Arg	Gly	Thr	Ala	Phe	Gly	Ser
210						215					220				
Asp	Asp	Ala	Gly	Gly	Lys	Leu	Thr	Tyr	Thr	Ile	Asp	Phe	Ala	Ala	Lys
225					230					235					240
Gln	Gly	Asn	Gly	Lys	Ile	Glu	His	Leu	Lys	Ser	Pro	Glu	Leu	Asn	Val
				245					250					255	
Asp	Leu	Ala	Ala	Ala	Asp	Ile	Lys	Pro	Asp	Gly	Lys	Arg	His	Ala	Val
			260					265					270		
Ile	Ser	Gly	Ser	Val	Leu	Tyr	Asn	Gln	Ala	Glu	Lys	Gly	Ser	Tyr	Ser
		275					280					285			
Leu	Gly	Ile	Phe	Gly	Gly	Lys	Ala	Gln	Glu	Val	Ala	Gly	Ser	Ala	Glu
	290					295					300				
Val	Lys	Thr	Val	Asn	Gly	Ile	Arg	His	Ile	Gly	Leu	Ala	Ala	Lys	Gln
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<210> 2

<211> 487

<212> PRT

<213> Neisseria meningitidis

<400> 2

Met	Phe	Lys	Arg	Ser	Val	Ile	Ala	Met	Ala	Cys	Ile	Phe	Ala	Leu	Ser
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Ala	Cys	Gly	Gly	Gly	Gly	Gly	Gly	Ser	Pro	Asp	Val	Lys	Ser	Ala	Asp
		20						25					30		
Thr	Leu	Ser	Lys	Pro	Ala	Ala	Pro	Trp	Ser	Glu	Lys	Glu	Thr	Glu	Ala
	35						40					45			
Lys	Glu	Asp	Ala	Pro	Gln	Ala	Gly	Ser	Gln	Gly	Gln	Gly	Ala	Pro	Ser
	50					55				60					
Ala	Gln	Gly	Ser	Gln	Asp	Met	Ala	Ala	Val	Ser	Glu	Glu	Asn	Thr	Gly
65					70				75					80	
Asn	Gly	Gly	Ala	Val	Thr	Ala	Asp	Asn	Pro	Lys	Asn	Glu	Asp	Glu	Val
				85					90					95	
Ala	Gln	Asn	Asp	Met	Pro	Gln	Asn	Ala	Ala	Gly	Thr	Asp	Ser	Ser	Thr
			100					105					110		
Pro	Asn	His	Thr	Pro	Asp	Pro	Asn	Met	Leu	Ala	Gly	Asn	Met	Glu	Asn
		115					120					125			
Gln	Ala	Thr	Asp	Ala	Gly	Glu	Ser	Ser	Gln	Pro	Ala	Asn	Gln	Pro	Asp
	130					135					140				
Met	Ala	Asn	Ala	Ala	Asp	Gly	Met	Gln	Gly	Asp	Asp	Pro	Ser	Ala	Gly
145					150				155					160	
Gly	Gln	Asn	Ala	Gly	Asn	Thr	Ala	Ala	Gln	Gly	Ala	Asn	Gln	Ala	Gly
				165					170					175	
Asn	Asn	Gln	Ala	Ala	Gly	Ser	Ser	Asp	Pro	Ile	Pro	Ala	Ser	Asn	Pro
		180						185					190		
Ala	Pro	Ala	Asn	Gly	Gly	Ser	Asn	Phe	Gly	Arg	Val	Asp	Leu	Ala	Asn
		195						200				205			
Gly	Val	Leu	Ile	Asp	Gly	Pro	Ser	Gln	Asn	Ile	Thr	Leu	Thr	His	Cys
	210					215					220				
Lys	Gly	Asp	Ser	Cys	Ser	Gly	Asn	Asn	Phe	Leu	Asp	Glu	Glu	Val	Gln
225					230				235					240	
Leu	Lys	Ser	Glu	Phe	Glu	Lys	Leu	Ser	Asp	Ala	Asp	Lys	Ile	Ser	Asn
				245					250					255	
Tyr	Lys	Lys	Asp	Gly	Lys	Asn	Asp	Lys	Phe	Val	Gly	Leu	Val	Ala	Asp
			260					265					270		
Ser	Val	Gln	Met	Lys	Gly	Ile	Asn	Gln	Tyr	Ile	Ile	Phe	Tyr	Lys	Pro

275	280	285
Lys Pro Thr Ser Phe Ala Arg Phe Arg Arg Ser Ala Arg Ser Arg Arg		
290	295	300
Ser Leu Pro Ala Glu Met Pro Leu Ile Pro Val Asn Gln Ala Asp Thr		
305	310	315
Leu Ile Val Asp Gly Glu Ala Val Ser Leu Thr Gly His Ser Gly Asn		
	325	330
Ile Phe Ala Pro Glu Gly Asn Tyr Arg Tyr Leu Thr Tyr Gly Ala Glu		
	340	345
Lys Leu Pro Gly Gly Ser Tyr Ala Leu Arg Val Gln Gly Glu Pro Ala		
	355	360
Lys Gly Glu Met Leu Ala Gly Ala Ala Val Tyr Asn Gly Glu Val Leu		
	370	375
His Phe His Thr Glu Asn Gly Arg Pro Tyr Pro Thr Arg Gly Arg Phe		
385	390	395
Ala Ala Lys Val Asp Phe Gly Ser Lys Ser Val Asp Gly Ile Ile Asp		
	405	410
Ser Gly Asp Asp Leu His Met Gly Thr Gln Lys Phe Lys Ala Ala Ile		
	420	425
Asp Gly Asn Gly Phe Lys Gly Thr Trp Thr Glu Asn Gly Ser Gly Asp		
	435	440
Val Ser Gly Lys Phe Tyr Gly Pro Ala Gly Glu Glu Val Ala Gly Lys		
	450	455
Tyr Ser Tyr Arg Pro Thr Asp Ala Glu Lys Gly Gly Phe Gly Val Phe		
465	470	475
Ala Gly Lys Lys Glu Gln Asp		480
	485	

<210> 3

<211> 174

<212> PRT

<213> Neisseria meningitidis

<400> 3

Met Lys Lys Ala Leu Ala Thr Leu Ile Ala Leu Ala Leu Pro Ala Ala	
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Ala Leu Ala Glu Gly Ala Ser Gly Phe Tyr Val Gln Ala Asp Ala Ala	
	20
His Ala Lys Ala Ser Ser Ser Leu Gly Ser Ala Lys Gly Phe Ser Pro	
	35
Arg Ile Ser Ala Gly Tyr Arg Ile Asn Asp Leu Arg Phe Ala Val Asp	
	50
Tyr Thr Arg Tyr Lys Asn Tyr Lys Ala Pro Ser Thr Asp Phe Lys Leu	
65	70
Tyr Ser Ile Gly Ala Ser Ala Ile Tyr Asp Phe Asp Thr Gln Ser Pro	
	85
Val Lys Pro Tyr Leu Gly Ala Arg Leu Ser Leu Asn Arg Ala Ser Val	
	100
Asp Leu Gly Gly Ser Asp Ser Phe Ser Gln Thr Ser Ile Gly Leu Gly	
	115
Val Leu Thr Gly Val Ser Tyr Ala Val Thr Pro Asn Val Asp Leu Asp	
	130
Ala Gly Tyr Arg Tyr Asn Tyr Ile Gly Lys Val Asn Thr Val Lys Asn	
145	150
Val Arg Ser Gly Glu Leu Ser Val Gly Val Arg Val Lys Phe	
	165
	170